Claims:

1. A relative position data correction apparatus, for correcting a shift that occurs between different map databases for the location of a predetermined point that is relatively indicated, characterized in that:

relative position data for an event occurrence point, which is indicated based on a position relative to a node that is designated in a shape data obtained from a first map database, is corrected by using the total length of a shape data that is stored in said first map database and that said event occurrence point belongs to, and the total length of a shape data that is stored in a second database and that said event occurrence point belongs to.

2. The relative position data correction apparatus according to claim 1, characterized in that:

to correct said relative position data for said event occurrence point, the relative position data correction apparatus employs a ratio of said total length of said shape data that is stored in said first map database and that said event occurrence point belongs to, to said total length of said shape data that is stored in said second map database and that said event occurrence point belongs to.

3. The relative position data correction apparatus

according to claim 1 or 2, characterized in that said apparatus comprises:

a transmission apparatus that includes

said first map database,

position expression conversion means for the conversion, based on a shape data that is obtained from said first map database and represents the periphery of said event occurrence point, of said event occurrence point into a relative location of a node designated in said shape data, and

first total length determination means for determining the total length of said shape data that is obtained from said first map database and that said event occurrence point belongs to,

wherein said transmission apparatus transmits said shape data for said periphery of said event occurrence point, including relative position data for said event occurrence point and said total length of said shape data determined by said first total length determination means; and

a reception apparatus that includes

said second map database,

second total length determination means for determining the total length of a shape data and that is obtained from said second map database and that said event occurrence point belongs to,

first relative position correction means for employing said total length determined by said first total length determination means and said total length determined by said second total length determination means to correct a relative location for said event occurrence point that has been obtained by said position expression correction means, and

event occurrence point specification means for specifying said event occurrence point, based on a relative location that has been corrected by said first relative position correction means, and said shape data obtained from said second map database.

4. The relative position data correction apparatus according to claim 1 or 2, characterized in that said apparatus comprises:

a transmission apparatus that includes

said first map database, and

position expression conversion means for the conversion, based on a shape data that is obtained from said first map database and represents the periphery of said event occurrence point, of said event occurrence point into a relative location of a node designated in said shape data,

wherein said transmission apparatus transmits relative position data for said event occurrence

point and said shape data for said periphery of said event occurrence point, including said total length of said shape data determined by said first total length determination means; and

a reception apparatus that includes

first total length determination means for determining the total length of said shape data that is transmitted by said transmission apparatus and that said event occurrence point belongs to,

said second map database,

second total length determination means for determining the total length of a shape data that is obtained from said second map database and that said event occurrence point belongs to,

first relative position correction means for employing said total length determined by said first total length determination means and said total length determined by said second total length determination means to correct a relative location for said event occurrence point that has been obtained by said position expression correction means, and

event occurrence point specification means for specifying said event occurrence point, based on a relative location that has been corrected by said first relative position correction means, and said shape data obtained from said second map database.

5. The relative position data correction apparatus according to claim 3, characterized in that said transmission apparatus further includes:

shape data compression/transformation means for performing an irreversible compression process, or a shape transformation process, for a shape data obtained from said first map database;

first shape data decoding means for decoding said shape data, which has been processed by said shape data compression/transformation means, that said event occurrence point belongs to;

third total length determination means for determining the total length of said shape data, which has been decoded by said first shape data decoding means, that said event occurrence point belongs to; and

second relative position correction means for employing said total length determined by said first total length determination means and said total length determined by said third total length determination means to correct said relative location of said event occurrence point obtained by said position expression conversion means,

wherein said transmission apparatus transmits said relative location of said event occurrence point corrected by said second relative position correction means and said shape data, which is obtained by said shape data

compression/transformation means through said irreversible compression process or said shape transformation process, that includes said total length of said shape data determined by said third total length determination means, and in that said reception apparatus further includes:

second shape data decoding means for decoding said shape data received from said transmission apparatus,

wherein said first relative position correction means employs said total length determined by said third total length determination means and said total length determined by said second total length determination means to correct said relative location of said event occurrence point that has been corrected by said second relative position correction means.

6. The relative position data correction apparatus according to claim 4, characterized in that said transmission apparatus further includes:

shape data compression/transformation means for performing an irreversible compression process, or a shape transformation process, for a shape data obtained from said first map database;

first shape data decoding means for decoding said shape data, which has been processed by said shape data compression/transformation means, that said event occurrence point belongs to;

third total length determination means for determining the total length of said shape data, which has been decoded by said first shape data decoding means, that said event occurrence point belongs to; and

second relative position correction means for employing said total length determined by said first total length determination means and said total length determined by said third total length determination means to correct said relative location of said event occurrence point obtained by said position expression conversion means,

wherein said transmission apparatus transmits said relative position of said event occurrence point corrected by said second relative position correction means and said shape data that is obtained by said shape data compression/transformation means through said irreversible compression process or said shape transformation process, and in that said reception apparatus further includes:

second shape data decoding means for decoding said shape data received from said transmission apparatus; and

third total length determination means for determining the total length of a shape data that is decoded by said second shape data decoding means and that said event occurrence point belongs to,

wherein said first relative position correction means employs said total length determined by said third total length determination means and said total length

determined by said second total length determination means to correct said relative location of said event occurrence point that has been corrected by said second relative position correction means.

7. The relative position data correction apparatus according to one of claims 3 to 6, characterized in that:

said shape data has a feature node designated between nodes located at both terminal ends; and

said position expression conversion means converts an event occurrence point into a location relative to said feature node in said shape data.

8. The relative position data correction apparatus according to claim 7, characterized in that:

at least two feature nodes are designated in a shape data, and when an event occurrence point is located between said two feature nodes, said first, second and third total length determination means determine the total length of the distance between said two feature nodes.

9. The relative position data correction apparatus according to one of claims 3 to 8, characterized in that:

said first, second and third total length determination means determine said total length of said shape data through calculation or based on a value defined

in advance.

10. The relative position data correction apparatus according to one of claims 7 to 9, characterized in that:

said transmission apparatus transmits shape data attribute information for identification and the types of said feature nodes designated in said shape data.

11. The relative position data correction apparatus according to one of claims 7 to 10, characterized in that:

each of said feature nodes is designated at a point whereat an angle difference in a predetermined area for a link constituting said shape data is equal to or greater than a predetermined angle.

12. A relative position data correction method, for correcting a shift that occurs between different map databases for the location of a predetermined point that is relatively indicated, characterized in that:

relative position data for an event occurrence point, which is indicated based on a position relative to a node that is designated in a shape data obtained from a first map database, is corrected by using the total length of a shape data that is stored in said first map database and that said event occurrence point belongs to, and the total length of a shape data that is stored in a second

database and that said event occurrence point belongs to.

13. The relative position data correction method according to claim 12, characterized in that:

to correct said relative position data for said event occurrence point, a ratio of said total length of said shape data that is stored in said first map database and that said event occurrence point belongs to, to said total length of said shape data that is stored in said second map database and that said event occurrence point belongs to.

14. The relative position data correction method according to claim 12 or 13, characterized in that said method comprises:

a position expression conversion step of the conversion, based on a shape data that is obtained from said first map database and represents the periphery of said event occurrence point, of said event occurrence point into a relative position of a node designated in said shape data;

a first total length determination step of determining the total length of said shape data that is obtained from said first map database and that said event occurrence point belongs to;

a transmission step of transmitting relative

position data for said event occurrence point and said shape data for said periphery of said event occurrence point, including said total length of said shape data determined at said first total length determination step;

a second total length determination step of determining the total length of a shape data and that is obtained from said second map database and that said event occurrence point belongs to; and

a first relative position correction step of employing said total length determined at said first total length determination step and said total length determined at said second total length determination step to correct a relative location for said event occurrence point that has been obtained at said position expression correction step.

15. The relative position data correction method according to claim 12 or 13, characterized in that said method comprises:

a position expression conversion step of the conversion, based on a shape data that is obtained from said first map database and represents the periphery of said event occurrence point, of said event occurrence point into a relative position of a node designated in said shape data;

a transmission step of transmitting relative position data for said event occurrence point and said

shape data for said periphery of said event occurrence point;

a first total length determination step of determining the total length of said shape data that is transmitted at said transmission step and that said event occurrence point belongs to;

a second total length determination step of determining the total length of a shape data and that is obtained from said second map database and that said event occurrence point belongs to; and

a first relative position correction step of employing said total length determined at said first total length determination step and said total length determined at said second total length determination step to correct a relative location for said event occurrence point that has been obtained at said position expression correction step.

16. The relative position data correction method according to claim 14, characterized in that said method comprises:

a shape data compression/transformation step of performing an irreversible compression process, or a shape transformation process, for a shape data obtained from said first map database;

a first shape data decoding step of decoding said shape data, which has been processed by said shape data

compression/transformation means, that said event occurrence point belongs to;

a third total length determination step of determining the total length of said shape data, which has been decoded at said first shape data decoding step, that said event occurrence point belongs to; and

a second relative position correction step of employing said total length determined at said first total length determination step and said total length determined at said third total length determination step to correct said relative location of said event occurrence point obtained at said position expression conversion step; and

a second shape data decoding step of decoding said shape data transmitted at said transmission step,

whereby, at said first relative position correction step, said total length determined at said third total length determination step and said total length determined at said second total length determination step are employed to correct said relative location of said event occurrence point that has been corrected at said second relative position correction step.

17. The relative position data correction method according to claim 15, characterized in that said method comprises:

a shape data compression/transformation step of

performing an irreversible compression process, or a shape transformation process, for a shape data obtained from said first map database;

a first shape data decoding step of decoding said shape data, which has been processed by said shape data compression/transformation means, that said event occurrence point belongs to;

a third total length determination step of determining the total length of said shape data, which has been decoded at said first shape data decoding step, that said event occurrence point belongs to; and

a second relative position correction step of employing said total length determined at said first total length determination step and said total length determined at said third total length determination step to correct said relative location of said event occurrence point obtained at said position expression conversion step;

a second shape data decoding step of decoding said shape data transmitted at said transmission step; and

a third total length determination step of determining the total length of said shape data that is decoded at said second shape data decoding step and that said event occurrence point belongs,

whereby, at said first relative position correction step, said total length determined at said third total length determination step and said total length determined

at said second total length determination step are employed to correct said relative location of said event occurrence point that has been corrected at said second relative position correction step.

18. The relative position data correction method according to one of claims 14 to 17, characterized in that:

said shape data has a feature node designated between nodes located at both terminal ends, and in that, at said position expression conversion step, an event occurrence point is converted into a location relative to said feature node in said shape data.

19. The relative position data correction method according to claim 18, characterized in that:

at least two feature nodes are designated in a shape data, and when an event occurrence point is located between said two feature nodes, the total length of the distance between said two feature nodes is determined at said first, second and third total length determination step.

20. The relative position data correction method according to one of claims 14 to 19, characterized in that:

at said first, second and third total length determination step, said total length of said shape data is

determined through calculation or based on a value defined in advance.

21. The relative position data correction method according to one of claims 18 to 20, characterized in that:

shape data attribute information for identification and the types of said feature nodes designated in said shape data are transmitted at said transmission step.

22. The relative position data correction method according to one of claims 18 to 21, characterized in that:

each of said feature nodes is designated at a point whereat an angle difference in a predetermined area for a link constituting said shape data is equal to or greater than a predetermined angle.

23. A relative position data correction program, which permits a computer to perform a relative position data correction method according to one of claims 12 to 22.

24. A shape data generation apparatus, for obtaining map data from a map database and for generating a shape data representing a predetermined section, characterized in that:

said apparatus designates a feature node as a point, in a section or in the periphery of said section

representing a shape data generated based on said map database, that satisfies a predetermined condition, and by generating or changing said shape data so as to include said feature node.

25. The shape data generation apparatus according to claim 24, characterized in that:

said apparatus alters relative position data for an event occurrence point, which is represented as a location relative to a node designated in a shape data generated based on said map database, into a location relative to a feature node nearest said event occurrence point.

26. The shape data generation apparatus according to claim 24 or 25, characterized in that:

said apparatus determines whether a starting point or an end point for a shape data generated based on said map database satisfies said predetermined condition; determining, in accordance with said starting point or said end point that does not satisfy said predetermined condition, whether there is a point, within a predetermined distance in said shape data, that satisfies said predetermined condition; and designating feature nodes at said starting point and said end point for said shape data, or near said starting point and said end point for said shape data.

27. The shape data generation apparatus according to one of claims 24 to 26, characterized in that:

said apparatus selects a point that is located within a predetermined distance, along a shape data, from a node or a feature node designated at a starting point or an end point for said shape data that satisfies a predetermined condition; designating said selected point as a first feature node; selecting a point that is located within a predetermined distance inward, along said shape data, of an n-th (n is a natural number) feature node that satisfies said predetermined condition; and designating said selected point as an (n+1)-th feature node.

28. The shape data generation apparatus according to one of claims 24 to 27, characterized in that:

said point that satisfies said predetermined condition is a point for which an absolute declination value, in a predetermined area between two continuous links, is equal to or greater than a predetermined value.

29. A shape data generation method, for obtaining map data from a map database and for generating a shape data representing a predetermined section, characterized in that:

designating a feature node as a point, in a section

or in the periphery of said section representing a shape data generated based on said map database, that satisfies a predetermined condition; and generating or changing said shape data so as to include said feature node.

30. The shape data generation method according to claim 29, characterized in that:

altering relative position data for an event occurrence point, which is represented as a location relative to a node designated in a shape data generated based on said map database, into a position relative to a feature node nearest said event occurrence point.

31. The shape data generation method according to claim 29 or 30, characterized in that:

determining whether a starting point or an end point for a shape data generated based on said map database satisfies said predetermined condition; determining, in accordance with said starting point or said end point that does not satisfy said predetermined condition, whether there is a point, within a predetermined distance in said shape data, that satisfies said predetermined condition; and

designating feature nodes at said starting point and said end point for said shape data, or near said starting point and said end point for said shape data.

32. The shape data generation method according to one of claims 29 to 31, characterized in that:

selecting a point that is located within a predetermined distance, along a shape data, from a node or a feature node designated at a starting point or an end point for said shape data that satisfies a predetermined condition;

designating said selected point as a first feature node; selecting a point that is located within a predetermined distance inward, along said shape data, of an n-th (n is a natural number) feature node that satisfies said predetermined condition; and

designating said selected point as an (n+1)-th feature node.

33. The shape data generation method according to one of claims 29 to 32, characterized in that:

said point that satisfies said predetermined condition is a point for which an absolute declination value, in a predetermined area between two continuous links, is equal to or greater than a predetermined value.

34. A shape data generation program, which permits a computer to perform a shape data generation method according to one of claims 29 to 33.